

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Number: 09/954,526

Art Unit: 1745

Applicants: James F. PITZEN, et al.

Examiner: John S. MAPLES

Filed: March 5, 2001

Confirmation No. 6141

Title: A Combination
Rechargeable, Detachable
Battery System and Power
Tool

Reissue of Patent No.: 5,792,573

Attorney Docket No.: 54525.000055

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF GENE WARZECHA UNDER 37 C.F.R. § 1.131

Sir,

I, Gene Warzecha, declare the following:

1. I am authorized to act on behalf of Linvatec Corporation, a corporation existing under the laws of the state of Florida and having a principle place of business at 11311 Concept Blvd., Largo, FL 33773 and that I have been authorized by Linvatec Corporation to make this Declaration under 37 C.F.R. §1.131(a).

2. Linvatec Corporation is the assignee of the entire right, title, and interest in the patent application identified above by virtue of a chain of title from the inventors, of the patent application identified above, to the current assignee.

3. The application identified above is a continuation of application no. 09/637,339, filed August 11, 2000 (now abandoned), which application is a reissue of application no. 08/692,886, filed July 24, 1996 (now U.S. Patent No. 5,792,573), which application is a divisional of application no. 08/258,338, filed June 10, 1994 (now U.S. Patent No. 5,553,675). Accordingly, the present application claims a priority filing date of June 10, 1994.

4. To the best of my knowledge, James F. Pitzen, Jeffrey D. Smith and Charles E. Alexson (collectively "the Inventors") are co-inventors of the invention described and claimed in the above-identified patent application, as evidenced by a copy of the executed oath filed in application no. 08/258,338, attached as Exhibit A.

5. Prior to February 10, 1994, the Inventors conceived of the invention. Conception of the invention is evidenced by drawings of an embodiment of the invention prepared prior to February 10, 1994. Date-redacted copies of the drawings are attached as Exhibit B.

6. The applicant proceeded with due diligence from a date prior to February 10, 1994 until at least the priority filing date of June 10, 1994 as evidenced by the following:

- a. Memos dated February 13, 1994 from Jeff Hohenshell, intellectual property counsel for then assignee 3M, to the Inventors regarding a rough draft of a patent application for the invention. Copies of the memos are attached as Exhibit C. The memos suggest the need for at least one meeting with the Inventors and an ongoing process in order to complete the application.
- b. Correspondence between Jeff Hohenshell and Gary Weinstein, an attorney with the law firm of Faegre & Benson, regarding the application. This correspondence is attached as Exhibit D and includes: a June 6, 1994 letter from Mr. Hohenshell to Mr. Weinstein; and a June 9, 1994 letter from Mr. Weinstein to Mr. Hohenshell. These letters indicate that ongoing application preparation as well as additional written and oral communication occurred during this time, including the time period from February 13, 1994 to June 6, 1994.

7. All statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

DECLARANT:

Gene Warzecha

Gene Warzecha
Assistant Secretary
Linvatec Corporation
11311 Concept Blvd.
Largo, FL 33773

7/19/06

Date

EXHIBIT A

OATH, POWER OF ATTORNEY, AND PETITION

Being duly sworn, We, James F. Pitzon, Jeffrey D. Smith and Charles E. Alexson, depose and say that: (1) our respective residences, citizenships, and mailing addresses are indicated below; (2) we have reviewed and understand the contents of attached specification, including the claims, as amended by any amendment specifically referred to herein; (3) we verily believe that we are the original, first, and joint inventors or discoverers of the invention or discovery in

ORTHOPEDIC SURGICAL DEVICE

described and claimed therein and for which a patent is sought; and (4) we hereby acknowledge our duty to disclose to the Patent and Trademark Office all information known to us to be material to the patentability as defined in Title 37, Code of Federal Regulations, §1.56*.

We hereby appoint Gary L. Griswold (Reg. No. 25,396), Walter N. Kim (Reg. No. 21,196), Roger R. Tamte (Reg. No. 21,093), Terry K. Qualey (Reg. No. 25,148), Warren R. Bovee (Reg. No. 26,434), Carolyn A. Bates (Reg. No. 27,853), Gerald F. Chernivec (Reg. No. 26,537), John C. Barnes (Reg. No. 20,278), and Jeffrey J. Hohenshell (Reg. No. 34,109) our attorneys with full powers (including the powers of appointment, substitution, and revocation) to prosecute this application and any division, continuation, continuation-in-part, reexamination, or reissue thereof, and to transact all business in the Patent and Trademark Office connected therewith; the mailing address and the telephone number of the above-mentioned attorneys are

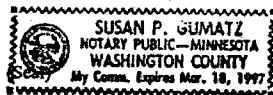
Attention: Jeffrey J. Hohenshell
3M Office of Intellectual Property Counsel
P.O. Box 33427
St. Paul, Minnesota 55133-3427
Telephone No. (612) 733-1500

Wherefore, we pray that Letters Patent be granted to us for the invention or discovery described and claimed in the attached specification and we hereby subscribe our names to the foregoing specification and claims, oath, power of attorney, and this petition, this 10th day of June, 1994.

1-00 James F. Pitzon
James F. Pitzon
Residence: City of Maplewood, County of Ramsey, State of Minnesota MN
Citizenship: United States of America
Post Office P.O. Box 33427
Address: St. Paul, Minnesota 55133-3427

STATE OF MINNESOTA }
COUNTY OF RAMSEY } ss.

Before me personally appeared James F. Pitzon, to me known to be the person described in the above application for patent, who signed the foregoing instrument in my presence, and made oath before me to the allegations set forth therein as being under oath, on the day and year aforesaid.



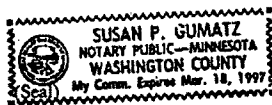
Susan P. Gumatz
Notary Public

Wherefore, we pray that Letters Patent be granted to us for the invention or discovery described and claimed in the attached specification and we hereby subscribe our names to the foregoing specification and claims, oath, power of attorney, and this petition, this 10th day of June, 1994.

Jeffrey D. Smith
 2-00 Jeffrey D. Smith
 Residence: Marine on St. Croix, County of Washington, State
 of Minnesota MN
 Citizenship: United States of America
 Post Office P.O. Box 33427
 Address: St. Paul, Minnesota 55133-3427

STATE OF MINNESOTA }
 ss.
 COUNTY OF RAMSEY }

Before me personally appeared Jeffrey D. Smith, to me known to be the person described in the above application for patent, who signed the foregoing instrument in my presence, and made oath before me to the allegations set forth therein as being under oath, on the day and year aforesaid.



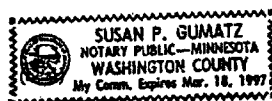
Susan P. Gumatz
 Notary Public

Wherefore, we pray that Letters Patent be granted to us for the invention or discovery described and claimed in the attached specification and we hereby subscribe our names to the foregoing specification and claims, oath, power of attorney, and this petition, this 10th day of June, 1994.

Charles E. Alexson
 3-00 Charles E. Alexson
 Residence: City of River Falls, County of Pierce, State of
 Wisconsin WI
 Citizenship: United States of America
 Post Office P.O. Box 33427
 Address: St. Paul, Minnesota 55133-3427

STATE OF MINNESOTA }
 ss.
 COUNTY OF RAMSEY }

Before me personally appeared Charles E. Alexson, to me known to be the person described in the above application for patent, who signed the foregoing instrument in my presence, and made oath before me to the allegations set forth therein as being under oath, on the day and year aforesaid.



Susan P. Gumatz
 Notary Public

EXHIBIT B



2 1

REDACTED

ITEM SIZE		PART NUMBER	DESCRIPTION	BOM	QTY
1 E	78-8047-7401-2	FRONT HOUSING		1	
2 E	78-8047-7402-0	REAR HOUSING		1	
3 D	78-8047-7450-9	MOTOR ASSEMBLY		*	1
4					
5 D	78-8047-7405-3	SPINDLE		1	
6 D	78-8047-7406-1	GEAR HOUSING		1	
7 D	78-8047-7407-9	NOSE INSERT		1	
8 D	78-8047-7408-7	KNOB		1	
9 B	78-8047-7449-1	LOCKING PIN		1	
10 C	78-8047-7411-1	NUT		1	
11 C	78-8047-7412-9	RING GEAR		1	
12 C	78-8047-7395-B	PLANET GEAR		3	
13 C	78-8047-7414-5	SPINDLE INSERT		1	
14 B	78-8047-7415-2	SET SCREW (MODIFIED)		4	
15 B	78-8047-7416-0	SPACER		1	
16 B	78-8047-7417-B	TUBE		1	
17 B	78-8047-7418-5	MAGNET		2	
18 B	78-8047-7419-4	SEAL INSERT		1	
19 C	78-8047-7424-4	TRIGGER		1	
20 B	78-8047-7425-1	TRIGGER SHAFT		1	
21 B	78-8047-7426-9	TRIGGER BUSHING		1	
22 D	78-8047-7428-5	CONTACT BLOCK		1	
23 C	78-8047-7429-3	CONTACT		2	
24 C	78-8047-7448-3	LATCH		1	
25 B	78-8017-2025-7	HELIX PIN		2	
26 B	78-8015-2639-9	COLLAR		1	
27 B	78-8047-7398-0	GEAR PIN		3	
28 B	78-8015-2640-7	TORSION SPRING		1	

ITEM SIZE		PART NUMBER	DESCRIPTION	BOM	QTY
41		78-8032-2293-0 (8534)	BEARING BALL, SST, .125 DIA		1
42		26-1009-9087-3 (8129)	RETAINING RING, EXT, BERYLLIUM COPPER WALDES TRIARC #N5100-12 H		3
43		26-1009-9651-7 (9525)	BALL BEARING, SST (1.375 I.D. x 1.625 O.D. x .156 WIDE) NHBB #SSR1-2622ZRA5P2SLY48		2
44		26-1009-9435-5 (9334)	RETAINING RING, EXT, SST, SMALLEY #VS-137-SD2-PA		1
45					
46		12-7994-5373-8 (8012)	D-RING (.114 x .070) PARKER #2-006, CLASS AN, N674-70		2
47		12-7995-5692-8 (8027)	D-RING (.145 x .070) PARKER #2-007, CLASS-AN, N674-70		1
48		78-8032-2094-2 (8006)	D-RING (.114 x .070) PARKER #2-024, CLASS-AN, N674-70		1
49		26-1009-9088-1 (9057)	D-RING (1.535 X .039) APPLE, 70 DURO, VITON		1
50		26-1009-9064-2 (9602)	COMPRESSION SPRING, SST, ASC #C0120-016-0560-S OR EQUAL (.120 O.D. x .016 WIRE x .56 LONG)		1
51		26-1009-8427-2 (8499)	COMPRESSION SPRING, SST, ASC #C030-026-0750-S OR EQUAL (.360 O.D. x .026 WIRE x .75 LONG)		1
52		26-1009-8428-0 (8500)	COMPRESSION SPRING, SST, CENTURY #L-83 (.281 O.D. x .026 WIRE x 5/16 LONG)		2
53		26-1009-8429-8 (8753)	GROOVED PIN, SST (.093 DIA x 7/16 LONG) DRIV-LOK, TYPE C		1
54		26-1009-8277-3 (8732)	V-RING FURSHEDA #V-16A, VITON		1
55		26-1009-9065-9 (9601)	COMPRESSION SPRING, SST, ASC #C0120-020-0250-S (.120 O.D. x .020 WIRE x .25 LONG)		1
56		26-1008-9157-6 (9418)	DOWEL PIN, SST, 1/16 DIA x 1/4 LONG		1
57		26-1009-8432-2 (9811)	D-RING (.208 x .070) APPLE, 80 DURO, Buna N		3
58		26-1009-8421-5 (9054)	D-RING (.2330 x .040) APPLE, 70 DURO, Buna N		1
59		18-3171-4875-9 (9967)	SCREW, SDC HD CAP, SST, #4-40 UNC x 5/8 LONG		3
60		12-7997-0828-9 (8305)	SCREW, SDC HD CAP, SST, #6-32 UNC x 1/2 LONG		1
61		12-7994-6689-6 (9969)	SCREW, BUTTON HD CAP, SST, #5-40 UNC x 1/4 LONG		2
62		26-1009-8422-3 (9870)	SCREW, SDC SET FLT PT, SST, #6-32 UNC x 1/4 LONG		1
63		12-7992-2321-4 (9419)	DOWEL PIN, SST 1/8 DIA x 7/16 LONG		1
64		26-1010-0165-4 (9417)	DOWEL PIN, SST, 3/32 DIA x 3/4 LONG		1

3M RESTRICTED

Surgical Division / 3M
3M Center, St. Paul, MN 55144

PROJECT TITLE
MAXI II BATTERY ASSEMBLY

HANDPIECE ASSEMBLY

SHEET 2 OF 2

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78-8047-7400-4 3

SEE SHEET 1 OF 2

NOTE: THIS IS FINAL DESIGN FOR REV-NEXT REVISION IS "A" RELEASE

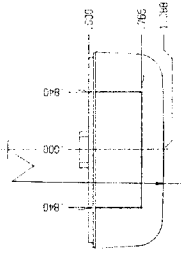
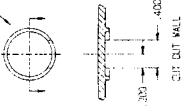
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SEAL F.
SCALE 0/1
ARMED TOP GUN 100



SECTION G-G
SCALE 6/1



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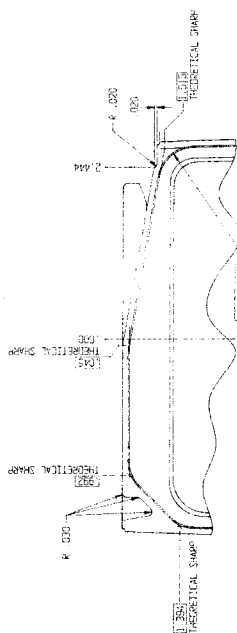


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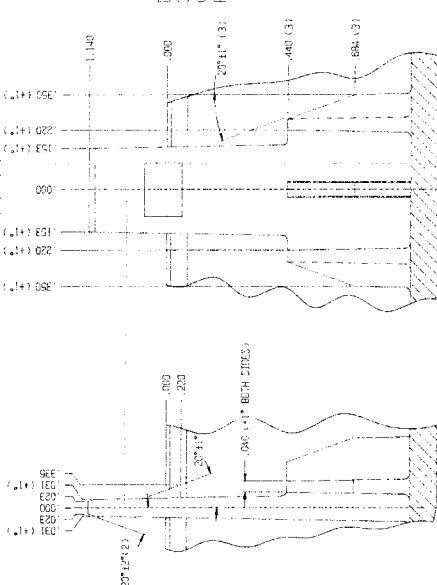
1-800-368-6768

- NOTES:
1. MATERIAL: ANODIZED ALUMINUM R-5000, BLACK FINISH
 2. DRAFT ANGLE: 1/4" 15° UNLESS OTHERWISE SPECIFIED
 3. NOTE: EXTERIOR SURFACES TO BE TEXTURED
 4. MAX FLASH: .002 PER SIDE (MAX) .002 THICK (MAX) .002 PER SIDE (MAX) .002 THICK (MAX) .002 PER SIDE (MAX) .002 THICK (MAX)
 5. ELECTRON PIN, PARTING LINE, AND GATE LOCATION TO BE APPROVED BY 2M ENGINEERS.
 6. ALL UNSPECIFIED FILLETS AND RADI .030 MAX UNLESS OTHERWISE NOTED.
 7. TOL. OF ALL SPECIFIED FILLETS AND RADI ± .005.

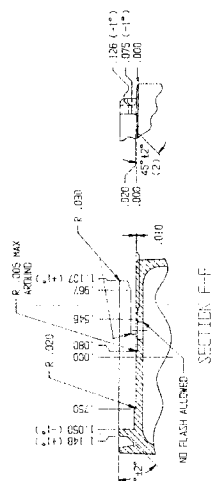


DETAIL D
SCALE 3/4

DETAIL C
SCALE 5/4
(2) ROTATED 180°
FROM EACH OTHER

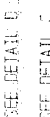


DETAIL E
SCALE 5/4
AROUND TOP OUTSIDE EDGE

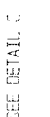


SECTION F-F

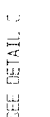
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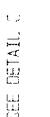
DETAIL C
SCALE 5/4



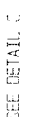
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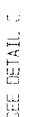
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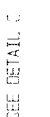
DETAIL F
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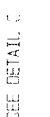
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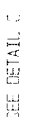
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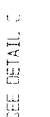
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SCALE 5/4



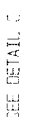
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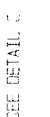
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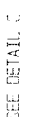
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SCALE 5/4



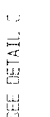
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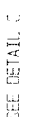
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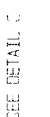
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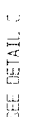
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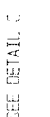
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SCALE 5/4



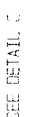
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SCALE 5/4



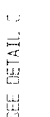
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SCALE 5/4



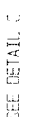
DETAIL T
SCALE 5/4



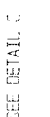
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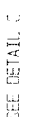
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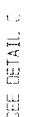
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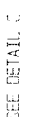
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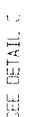
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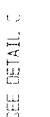
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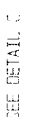
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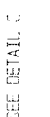
DETAIL AB
SCALE 5/4



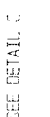
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SCALE 5/4



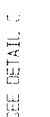
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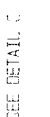
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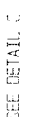
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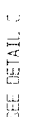
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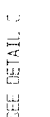
DETAIL AH
SCALE 5/4



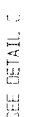
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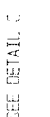
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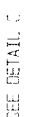
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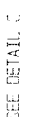
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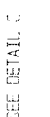
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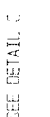
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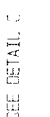
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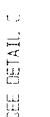
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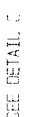
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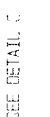
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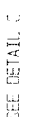
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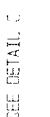
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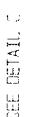
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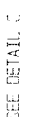
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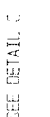
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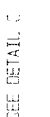
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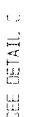
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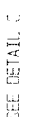
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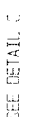
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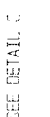
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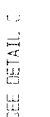
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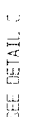
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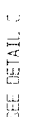
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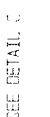
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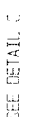
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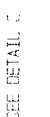
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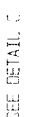
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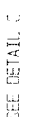
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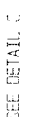
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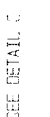
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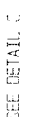
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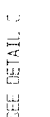
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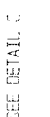
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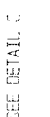
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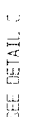
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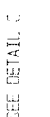
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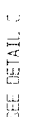
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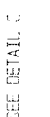
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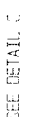
DETAIL BU
SCALE 5/4



DETAIL BV
SCALE 5/4



DETAIL BW
SCALE 5/4



REDACTED

3M RESTRICTED

PR. J SMITH	DATE	POSTING DATE	POSTING ADDRESS	TITLE
Mr. CA				PROJECT MAXI II BATTERY SYSTEM

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Surgical Division / 3M
3M Center, St. Paul, MN 55144

FRONT HOUSING

USED ON: 78-9047-7400-4 (2300)

MAIL: FRUNI FURGING / 8-804 / - / 452-5

353

THEORETICAL ALL
AROUND EXCEPT BOTTOM
AND RUNOUT AREA

DETAIL B
SCALE 4/1

SECTION C-C
SCALE 2/1

SECTION: 0-0
SCALE 2/1

SECTION A-A

END

CLINK Ø .420 X .50" INCL
CURE Ø .422 FROM TOP SIDE

40654.0003

27

—

(continued)

[illegible]

.....

AND

1961
THE
1961

10

EXHIBIT C

CONFIDENTIAL ATTORNEY - CLIENT
PRIVILEGE ATTORNEY WORK PRODUCT

3M

To: Jim Pitzen 270-4N-09
Chuck Alexson 270-4N-09

From: Jeff Hohenshell 3-1555

Re: Pitzen et al., 3M ref. no.: 50306 USA 6A

Date: February 13, 1994

Enclosed is a very rough draft of the above-identified application.

Please carefully review the enclosed application and provide me with your comments and the requested information. Please note this application contains attorney-client privileged material. Thus, it is important that you do not make any copies of this application, and that you return it to me with your comments.

With respect to the requested drawings, you may either send them to me or to Kevin Anderson (3-1541). Since our drafting department is currently overwhelmed with work, please send us the drawings as soon as possible. Any assistance that you could give us in this regard would be most appreciated by both our drafting department and me.

Once I have your comments on the draft, I can begin the process of completing it. I suggest that a meeting would be appropriate to discuss this draft. Please let me know when you are available for such a meeting.

Thank you for your help on this application. If you have any questions, please give me a call.

1177 Jeffrey J. Hohenshell

cc: ~~Jim Pitzen~~
~~Chuck Alexson~~
Jerry Peterson (memo only)

Minnesota Mining and
Manufacturing Company

PO Box 33427
St. Paul, MN 55133-3427 USA
612 733 1555
612 736 3833 Facsimile
29 7023 Telex
PATENTS Cable

3M

To: Kevin Anderson

From: Jeff Hohenshell

Re: Pitzen et al., 3M ref. no.: 50306 USA 6A

Date: February 13, 1994

Enclosed is a rough draft of the above-identified application.

At this point there are ten figures in the application, although several additional drawings may be added.

Please add the reference characters to these drawings and return them to me as you have the opportunity. I have attached a parts list for your convenience. Please let me know if you cannot work on this application this week. I expect to supply you with the additional drawings early this week.

Thank you for your help on this application. If you have any questions, please give me a call, or call Jim Pitzen (3-7273) or Chuck Alexson (6-3197).



Jeff

cc: Jim Pitzen
Chuck Alexson

Minnesota Mining and
Manufacturing Company

PO Box 33427
St. Paul, MN 55133-3427 USA
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29 7023 Telex
PATENTS Cable

EXHIBIT D

June 6, 1994

**CONFIDENTIAL ATTORNEY - CLIENT
PRIVILEGE ATTORNEY WORK PRODUCT**



Gary Weinstein
Faegre & Benson
2200 Norwest Center
90 South Seventh Street
Minneapolis, MN 55402-3901

VIA FEDERAL EXPRESS

Dave Robbins
Patent Liaison
275-2E-11

Jeffrey D. Smith
Inventor
270-4N-09

Chuck Alexson
Inventor
270-4N-09

James Pitzen
Inventor
270-4N-09

Re: Proposed Patent Application for an Orthopedic Surgical Device
3M Ref: 50306USA6A

Dear Gentlemen:

Enclosed is a final, draft copy of the above-identified case. This includes 36 pages of text and 10 sheets of drawings.

Please carefully review the enclosed patent application. Once I have everyone's comments on this draft, I will prepare the formal papers for filing this application. To the persons addressed as inventors in this letter, please note that there are three fill-in-the-blanks with some informal details that I would like to add to this application.

Please review these documents as soon as you have the opportunity. Once you have reviewed this application, we can file it at the U.S. Patent Office along with the two design patents that we have previously discussed.

Once I have heard from everyone, I will attempt to set up a time where the inventors may execute the formal papers for this case.

Minnesota Mining and
Manufacturing Company

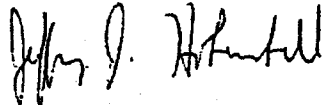
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St. Paul, MN 55133-3427 USA
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29 7023 Telex
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Mr. Gary Weinstein
Page Two
June 6, 1994

Again, please let me have your comments as soon as you have the opportunity, as I would like to have an early filing date for this application and the two design patent applications.

Thank you again for your assistance with this case.

Yours,

A handwritten signature in dark ink, appearing to read "Jeffrey J. Hohenshell". The signature is written in a cursive, somewhat stylized script.

Jeffrey J. Hohenshell

Enclosures

c: Jerry Peterson
270-4N-09 (letter only)

JJH/mls:D1:weinst.lt2

FAEGRE & BENSON

2200 NORWEST CENTER
80 SOUTH SEVENTH STREET
MINNEAPOLIS, MINNESOTA 55402-3001

612/336-3000
FACSIMILE 612/336-3026

GARY S. WEINSTEIN
612/336-3492

June 9, 1994

VIA FACSIMILE

Mr. Jeffrey J. Hohenshell
Intellectual Property Counsel
MINNESOTA MINING AND MANUFACTURING COMPANY
P.O. Box 33427
Saint Paul, Minnesota 55133-3427

REDACTED

RE:

Patent Application for Orthopedic Surgical Device
Our File: 27987-111901
Your File: 50306USA6A

Dear Jeff:

Enclosed are the proposed changes I would make to the above-referenced patent application. Several of the changes are random grammatical items which I noticed while reviewing the application. The major portion, as you requested, is for the description of the electrical components of the device.

On page 1, line 19, delete the ",,".

On page 4, line 20, after "to" insert --,--.

On page 5, line 33, replace "comprise" with --comprises--.

On page 10, line 21, after the word "example" insert --,--.

On page 26, line 13, replace "through" with --62 by--.

DENVER

DES MOINES

WASHINGTON, D.C.

LONDON

FRANKFURT

Mr. Jeffrey J. Hohenshell
June 9, 1994
Page - 2 -

On page 26, line 13, after "field" insert --,--.

Replace the paragraphs beginning at page 12, line 20 and continuing through page 13, line 28 with the following:

The drive assembly 10 also includes electrical circuit means operatively associated with the trigger assembly 40 for controlling the motor 12. The illustrated electrical circuit means comprises an on/off hall sensor 52 and a speed control hall sensor 54.

The on/off hall sensor 52 is a digital hall sensor having an output signal with two levels corresponding to an on state and an off state. The on/off hall sensor 52 senses the presence of a magnetic field from the magnet 44 on the trigger assembly 40. When the trigger assembly 40 is released, the magnet 44 is positioned directly over the on/off hall sensor 52 (Figure 2). The magnet's 44 magnetic field causes the on/off hall sensor 52 to produce an output signal corresponding to an off state. As the trigger assembly 40 is depressed, the magnet 44 moves away from the on/off hall sensor 52. The on/off hall sensor 52, no longer sensing the presence of a magnetic field, produces an output signal corresponding to an on state.

The output signal from the on/off hall sensor 52 is conditioned by electrical circuitry which provides a standby signal when the on/off hall sensor 52 produces an off signal. The standby signal disables motor drive circuitry and the speed control hall sensor 54. The standby signal therefore ensures that the motor 12 is off whenever the trigger assembly 40 is in a released position (Figure 2). An added benefit of disabling the motor drive circuitry and the speed control hall sensor 54 is that the electrical power required by the device 10 is significantly reduced during periods when the trigger assembly 40 is not depressed. This current reduction during a standby mode improves energy

Mr. Jeffrey J. Hohenshell

June 9, 1994

Page - 3 -

efficiency of the device 10. In this manner, the device 10 may optionally include a battery saver feature.

The speed control hall sensor 54 is a linear hall sensor which provides a speed control signal having a range of levels based upon the strength of the magnetic field that the variable speed hall sensor 54 detects. As the strength of the magnetic field increases, the speed control hall sensor 54 produces a speed control signal with a higher level. As the trigger assembly 40 is depressed, the magnet 44 moves towards the speed control hall sensor 54 and increases the magnetic field across it. The speed control signal from the speed control hall sensor 54 is conditioned and drives the motor control circuit to provide motor speeds proportional to the speed control signal. Therefore, as the trigger assembly 40 is further depressed, the motor control circuitry increases the motor speed of the drive assembly 10. In this manner, the drive assembly 10 may optionally comprise a variable speed device.

If you have any questions, please feel free to call.

Very truly yours,


Gary S. Weinstein

GSW:dl

MLL1D7DA.WPS